

- IX. "On the Physical Nature of the Coagulation of the Blood." By ALFRED HUTCHISON SMEE, F.C.S., F.S.S. Communicated by ALFRED SMEE, F.R.S. Received May 27, 1872.

(Abstract.)

After passing in review the principal opinions hitherto entertained on the real nature of the coagulation of the blood, the author states that he is led to refer the solidification of fibrin in the process of coagulation to the same class of phenomena as the pectization of colloid liquids, as already hinted by the late Professor Graham and others. He points out at considerable length the chief circumstances which influence the change in colloidal fluids, and proceeds to compare the properties of colloid silica with an organic body of the nature of fibrin.

- X. "On the Detection of Organic and other Nitrogenized Matter existing in the Atmosphere." By ALFRED HUTCHISON SMEE, F.C.S., F.S.S. Communicated by ALFRED SMEE, F.R.S. Received June 1, 1872.

(Abstract.)

In this communication the author describes a method which he has devised, and which he names "distillation by cold," by which he believes the detection and determination of ammonia and other organic impurities existing in the atmosphere will be greatly facilitated.

A glass funnel (usually of 8 or 9 inches) is drawn to a point and closed. It is supported in an ordinary stand, and filled with ice. Condensation of the watery vapour of the atmosphere then takes place; the dew collects into drops, which trickle down the outside of the funnel, and at last fall from the point, under which a small receiver is placed to catch them. The total quantity of liquid collected in a given time is measured, and the quantity of ammonia determined by Nessler's test.

By the method of distillation by cold, the author found it possible to distil many substances which are decomposed at a high temperature. Thus many delicate odours of flowers were distilled by placing the flowers under a bell-glass sufficiently large to cover the funnel containing the ice. The odours were found to be more rapidly and completely abstracted by placing a dish with a little ether under the bell-glass at the time of distillation.

The paper was accompanied by Tables giving the results obtained in 107 experiments, together with the atmospheric conditions prevailing at the time. The experiments were made in a garden, in a bed-room, in hospital wards, in the open country, &c. A few of the numbers obtained are here given by way of example:—

Fluid collected in minims.	Ammonia in grains per gallon.	Source.
150	1·9712	Erysipelas.
120	·1791	Garden.
55	6·8807	Drains.
90	2·1000	Bed-room.
420	2·9568	Stables.
150	·0985	Victoria Park.

XI. "Contributions to Terrestrial Magnetism.—No. XIII." By General Sir EDWARD SABINE, K.C.B., V.P.R.S. Received June 19, 1872.

(Abstract.)

The author presents this paper as the companion of No. XI. of his Contributions to Terrestrial Magnetism, which contained the Magnetic Survey of the Southern Hemisphere from 40° south latitude to the extreme limit towards the southern pole, as does the present memoir, No. XIII. of the same series, the three magnetic elements from 40° north latitude to the furthest attained limit towards the northern pole. In both papers the mean epoch is the same, viz. 1842·5. Where it has been possible to do so, corrections to this mean epoch have been obtained and applied to earlier and later observations.

The determinations are derived from observers of all countries, and are arranged in zones, each of 5° of latitude, passing round the globe. The Table thus formed contains between 3000 and 4000 stations at which the magnetic elements have been determined. The observers are named, and references are made to the sources from whence their observations are taken. The paper is accompanied by maps of the resulting Isogonic, Iso-clinal, and Isodynamic Lines, executed at the Hydrographic Office.

XII. "On the Law of Extraordinary Refraction in Iceland Spar." By G. G. STOKES, M.A., Sec. R.S. Received June 20, 1872.

It is now some years since I carried out, in the case of Iceland spar, the method of examination of the law of refraction which I described in my report on Double Refraction, published in the Report of the British Association for the year 1862, p. 272. A prism, approximately right-angled isosceles, was cut in such a direction as to admit of scrutiny, across the two acute angles, in directions of the wave-normal within the crystal comprising respectively inclinations of 90° and 45° to the axis. The directions of the cut faces were referred by reflection to the cleavage-planes, and thereby to the axis. The light observed was the bright D of a soda-flame.

The result obtained was, that Huygens's construction gives the true law